

MURPHY, T. M. JR. AND FENDLEY, T. T. (1973): A new technique for live trapping nuisance alligators. *Proc. Annu. 27th Conf. S.E. Assoc. Game and Fish Comm.* 27: 308-311.

SINGH, L. A. K. (1979): Sexual attraction of a wild mugger (*Crocodylus palustris* Lesson) toward captive muggers. *J. Bombay nat. Hist. Soc.*, 76(1): 167-172.

————— (in press): The Indian Mugger, *Crocodylus palustris* Lesson (Reptilia, Crocodilia): Observations on the behaviour of a female from nature. *J. Bombay nat. Hist. Soc.*

WEBB, G. J. W. AND MESSEL, H. (1977): Crocodile capture techniques. *J. Wildl. Manage.* 41(3): 572-575.

22. SEXING AND SEX RATIOS OF GHARIAL (*GAVALIS GANGETICUS*) RAISED IN CAPTIVITY

(With a plate & a text-figure)

INTRODUCTION

Determination of the sex of individual animals and the sex ratios of populations is an important tool in the study and management of Crocodylians. A pot like 'ghara' or narial excrescence on the snout tip of adult male gharial distinguishes them from females, but otherwise sex of Crocodylians cannot be distinguished from external features. Therefore probing of the cloaca and examination of the penial/clitoral organ, hereafter referred to as the sex organ, is the only method of identifying the sex of individual crocodiles.

Whitaker *et al.* (in litt.) on the basis of cloacal probing of 20 gharial between 1 to 3 m in length state that it is difficult to sex gharial under 2 m in length. They further point out that a 2.7 m long male gharial 18 years of age had a penis only a few cm long and conclude that the sexual development of gharial is considerably slower than in other Crocodylians. M. V. Subba Rao (1981) states that the sex of gharial may be distinguished by cloacal probing if a minimum limit of 75 cm for total body length is observed while sexing gharial. V. B. Singh (1979) has reported on the sex ratios of gharial observed in nature.

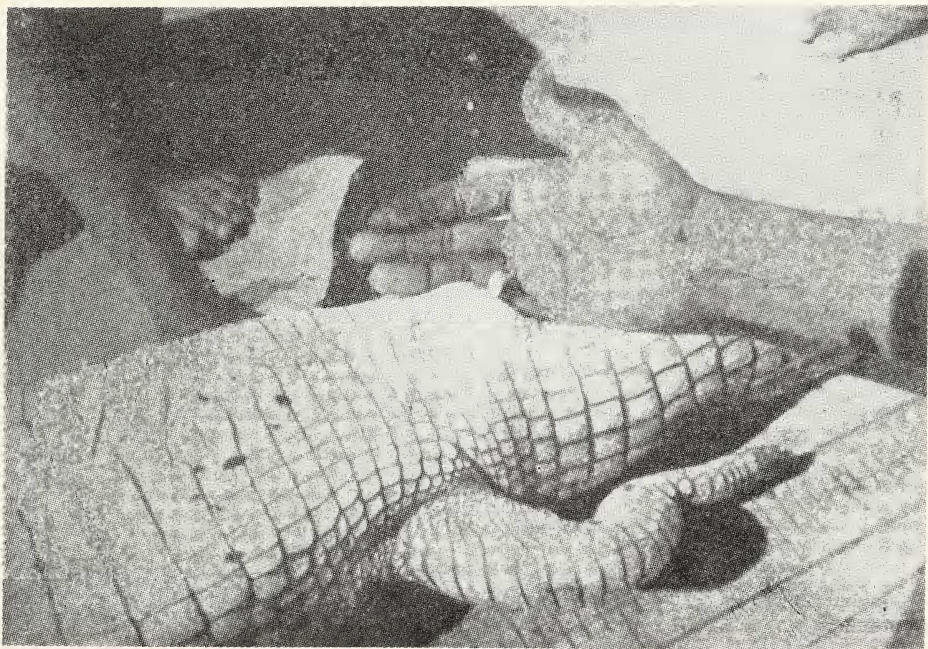
At the Gharial Rehabilitation Centre at Kukrail near Lucknow, sexing of juvenile

gharial hatched from eggs collected from the Chambal river and reared at the centre, was done by probing of the cloaca on animals upto 4 years of age. After initial difficulty in unambiguously distinguishing the sex of animals, it was observed that in relation to the total body length, gharial displayed discretely differential development of the sex organ. This paper describes the basis for sex distinction in cloacal probing of juvenile gharial and sex ratios determined in different age classes of captive raised juveniles. Production of different sexes in Crocodylians has been discussed in light of sex ratios of captive and wild populations reported for other Crocodylian species.

METHODS

Probing of the cloaca and extrusion of the sex organ was done with the little finger of the right hand. Prior to probing the finger was neatly manicured and the hand of the examiner and the cloacal vent of the gharial was cleaned and freed of sand particles by washing with a solution of potassium permanganate. Vaseline was used in cases to facilitate probing. The sex organ which lies forward of the anterior extremity of the cloacal vent was located and extruded by the finger to reveal its floral tip for examination.

The sex of the animal was then distinguished on the basis of appearance of the sex organ



Above: View of an extruded female clitoral organ.
Below: View of an extruded male penial organ.

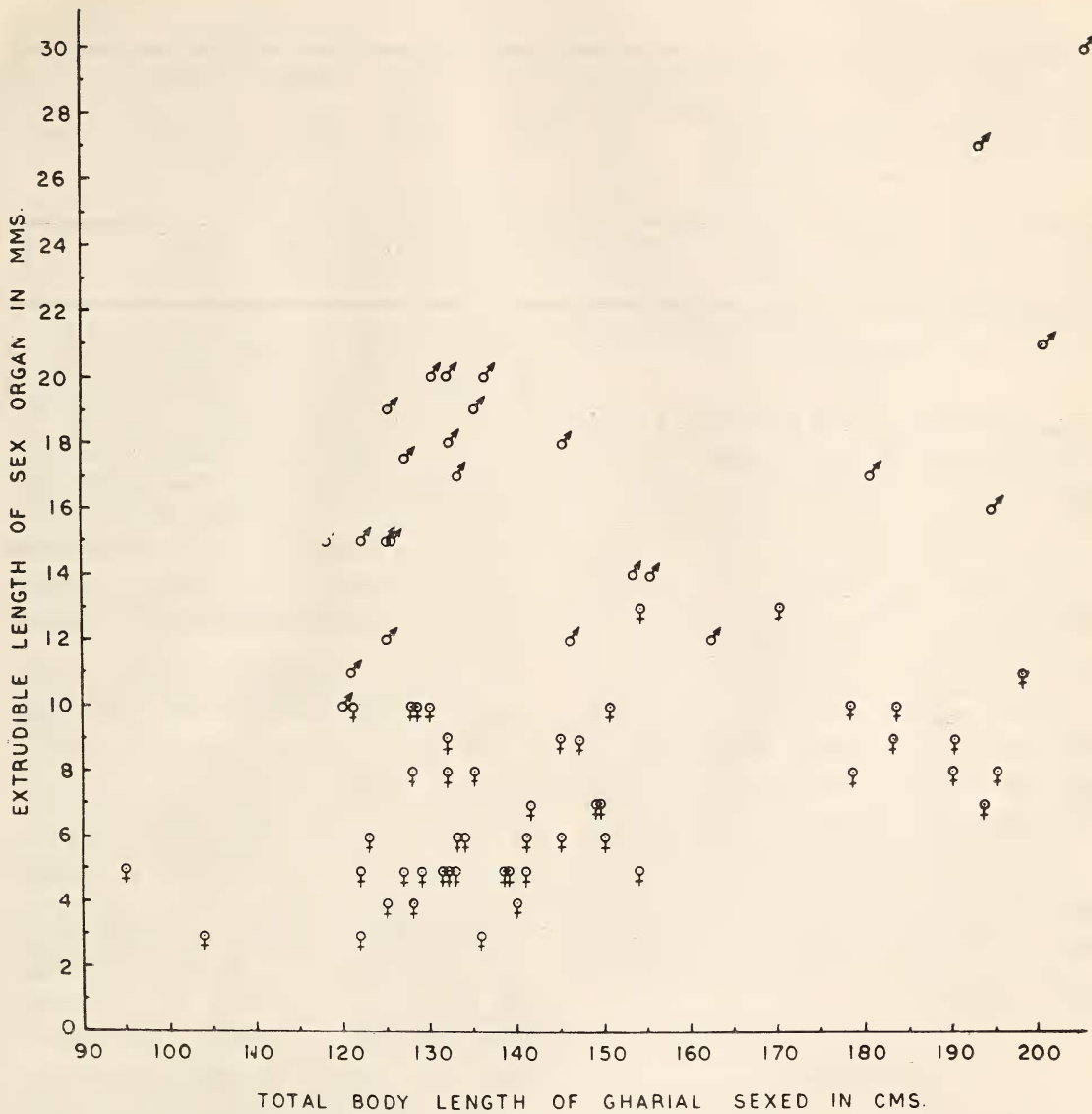


Fig. 1. Relationship of total body length of gharial to penial/clitoral organ length in different sexes.

(length, thickness and floral tip development). This fell into two broad categories illustrated in plate 1. The total body length of the gharial and the length of the exposed portion of the

sex organ, after manipulating for maximum extrusibility were then recorded. The extrusible length of the sex organ was plotted against total body length (figure 1).